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CHARTRES.

[Porch of Chartres Cathedral.]

CHARTRES, the principal town of the department of the Eure and Loire, is about sixty-five miles south-west of Paris, on the road which passes through Versailles and Rambouillet to Tours. It is one of the oldest towns in France, and was known to the ancients under the names of Autricum and Carnutum. During the middle ages it was frequently taken and pillaged, and in the fifteenth century it was for a considerable period in the possession of the English; but it was retaken by Dunois. In 1568 the Protestant party, then in arms, besieged Chartres, but without success. In 1591, when France was torn by internal contests, the town was taken by Henry IV. Three years afterwards he was crowned in the cathedral; that of Rheims, in which this ceremony had always been performed, not being in his possession; or, as is sometimes stated, the prelate of Rheims being considered a disaffected person, the monarch transferred his favours to Chartres. At the village of Brétigny, a short distance from Chartres, a treaty was signed between the French and English, by which the French King, who had been taken prisoner at the battle of Poictiers in 1356, was restored to his country.

The ancient defences of the town are destroyed, but the houses in many parts of it still retain the appearance which is peculiar to the domestic edifices of the middle ages, standing with their many-gabled fronts towards the narrow and crooked streets; the wood with which they are constructed exhibiting curious specimens of the carver's art. Some of the houses have little towers,

which are still more characteristic of the period referred to. The town stands on an eminence, and is divided into the upper and lower town; the former, being the most modern, contains the principal inns, the post-office, and other public buildings. Nevertheless the place of St. Peter, which is in the old town, is very agreeably ornamented by alleys of trees. The old ramparts are converted into a boulevard, which is much frequented as a promenade. The finest public walk is the Place des Barricades, which is beyond the walls. Three of the old gates are standing, the most remarkable of which is the Porte Guillaume. The communication between the upper and lower town is by pathways so steep, as totally to exclude the use of carriages; and wine, wood, coal, and other bulky articles are introduced by means of hand-barrows. The river Eure, which runs through the lower town, divides into two branches, only one of which enters within the limits of the town. The bridge was constructed by Vauban. Chartres does not possess any variety of public buildings. The Prefecture was formerly the palace of the bishop, but the Revolution has changed its destination to secular purposes. There is a statue of General Marceau, who was a native of Chartres, and while employed by the Republican government in the task of pacifying La Vendée, earned this memorial by his admirable prudence and good feeling in such difficult circumstances. The choir of the church of St. Andrew is built on an arch beneath which the Eure passes. The construction of the church is somewhat peculiar, and the stones are cemented in such a manner, that the edifice appears as if constructed out of the solid rock. The population of Chartres is above 14,000. It is the seat of a bishop, and contains several administrative offices of the first class. The public library possesses about 35,000 volumes; there are public baths, a museum of natural history, a botanic garden, a public drawing-school, and other useful institutions. Chartres is the centre of the most important corn-growing district in France, and the capital derives its chief supplies from the markets which are held here twice a week. The population is so small in comparison with the large district in which it is situated, that nearly all the corn is consumed elsewhere than where it is grown. The town is celebrated throughout the kingdom for its pies. Tanneries, dyeing-establishments, and hat-manufactories are carried on rather extensively, and the wool-trade is also of some importance.

The spires of the cathedral are visible twenty-five miles before the traveller reaches Chartres, from whatever quarter he approaches the town; and yet it is not possible to obtain a complete view of this fine old edifice, so closely is it surrounded by other buildings. One of the spires is heavy and without ornament, if we except the stones being cut like the scales of a fish, the effect of which is singular rather than pleasing. This spire seems always to be leaning, from whatever point it is viewed. This is owing to the angle which faces the spectator being so straight as to appear as if it were entirely vertical. The other spire is enriched with ornaments towards the middle; but as they are not continued throughout, the effect is not harmonious. The steeples of Chartres are about 306 feet high; that of Strasburg is 492 feet in height. There is in France an old saying to the effect that all the requisites for a perfect church would be combined by adopting the entrance of the cathedral of Rheims, the nave of that of Amiens, the choir of Beauvais, and the steeple of Chartres. The entrance to the cathedral is by a porch a portion of which is represented in the cut. The obscurity which reigns in the interior is so great, that except the day be bright, it is not possible to read small print. This is owing to the thickness of the glass, and to its being highly stained. Along the exterior of the choir there are forty-three niches, filled with groups illustrative of Scripture history, above which are delicately executed Gothic ornaments, and beneath arabesque ornaments equally graceful. The interior part of the choir contains representations in effigy of various scenes in the life of Christ, executed in Carrara marble by Bridan; and one to commemorate a vow made by Louis XIII. in this cathedral. The choir is surrounded by a double range of lateral naves, sustained by thirty-two pillars. In the middle of the nave the pavement is laid in a spiral form, and is popularly called "la lieue," from the belief that the length of the circles, if traced from their commencement, would be equal to a league. The nave is supported by a single row of sixteen pillars; eight sustain the cross, making altogether fifty-six pillars. The principal altar is remarkable for a colossal group in marble of the Assumption of the Virgin, which was executed in 1773 by Bridan. This work had very nearly been destroyed during the Revolution, but was saved by one of the inhabitants, who proposed changing the Virgin into the Goddess of Liberty, and accordingly placed a Phrygian cap on her head. The group is supported by five columns, which stand in the lower church. This latter portion of the cathedral, previous to the destruction, during the Revolution, of the chapels and effigies which it contained, was one of the most complete of its kind in France. It is not at present generally exhibited to visitors, though highly curious and picturesque.

The Rev. G. D. Whittington's 'Ecclesiastical Antiquities of France' contains the following account of the Cathedral of Chartres:—

"The Cathedral of Chartres, one of the grandest works of the age, was rebuilt in the eleventh century by Fulbert, its bishop. This church, which is said to have been originally founded in the third century, had been frequently burnt, particularly by lightning in 1020; upon which Fulbert undertook its entire reconstruction, and the great reputation he enjoyed in France and the rest of Europe enabled him to execute it in a manner till then unknown in his country. Kanute, king of England, and Richard, duke of Normandy, were among the princes who assisted him with contributions. Some accounts mention that he had the gratification of seeing the work finished before his death, which happened in 1028; this, however, is disproved by the epitaph upon Thierri, or Theodoric, his successor, still existing in the church of St. Père, which ascribes the completion of the fabric to that prelate, who died in 1048. The northern part was erected afterwards, in 1060, at the expense of Jean Cormier, a native of Chartres, and physician to the king." The above he has taken from the account given by Lenoir, who derived his information from the archives of the city of Chartres, preserved in the King's Library at Paris. Mr. Whittington adds,—"The length of the Cathedral of Chartres is 420 feet; the height 108 feet; the nave is 48 feet wide, with aisles 18½ feet wide and 42 feet high. On each side of the choir the aisles are double, and the transept, which is 210 feet long, contains aisles, which seems to have been the first instance of this magnificent arrangement in France. There are seven chapels in the chevet, and the crypts and lower church are built with great art and regularity."

The splendid remains of ecclesiastical architecture which abound in France and England, and so many specimens of which have been given in the 'Penny Magazine,' may be contemplated with feelings as various as are the different degrees of taste and knowledge in those who look upon them. They cannot fail to impress the mind with a sense of the grandeur of the human intellect when it aspires to noble efforts; they show that the social condition of man was improving, and that the circumstances in which he was placed at

the period when these edifices were erected were happier than those through which he had previously passed. The Cathedral of Chartres was commenced when the human race, so far as Europe was concerned, were gathering confidence and putting some life into their movements, after the passing away of a period which they had been led to look upon as fatal to their general existence. Sismondi, alluding to this apprehension which so generally pervaded men's minds at the period alluded to, says, in his 'Fall of the Roman Empire,'—"At the end of the tenth century the almost universal expectation was then entertained of the approaching end of the world. The nearer the thousandth year from the birth of Christ approached, the more did panic terror take possession of every mind. The archives of all countries contain a great number of charters of the tenth century beginning with these words:—'Appropinquante fine mundi,' *i. e.*, as the end of the world is approaching. All the ordinary motives of action were suspended, or superseded by contrary ones; every passion of the mind was hushed, and the present was lost in the appalling future. At last, the extreme period fixed by the prophecies was passed; the end of the world had not arrived; the terror was gradually but entirely dissipated." It was at this period, observes the Rev. G. D. Whittington, that the Christians of the eleventh century "hastened to rebuild and repair their ecclesiastical structures, and the various cities and provinces—especially of France—vied with each other in a display of enthusiastic devotion. On all sides, new and more stately edifices of religion arose, and the world, according to the expression of a contemporary writer, seeming to cast off its ancient appearance, everywhere put on a white mantle of churches."

The following passages, showing the influence of circumstances on the progress of architecture, are taken from Mr. Whittington's work, and will serve to render such objects as cathedrals more interesting to the general observer:—"The style of architecture in the eleventh was the same as in the preceding centuries, though the churches were constructed on a larger scale and in a more solid manner. With a few exceptions, the oldest buildings now existing in France are to be traced to this era. The fashion in practice all over Europe continued to be a barbarous imitation of the Roman manner; but from various circumstances, in different countries, it partook of different features. The Saxon churches of England were inferior in elevation, massiveness, and magnitude to those of the Normans; and the Norman mode differed considerably from that which was adopted in the neighbourhood of Paris, and farther to the south." The author next alludes to the effects of the Crusades on the arts and manners of Europe. "They roused mankind," he says, "from the intellectual lethargy into which they had been plunged for so many centuries: they brought the different people of Europe together, and carried them into more civilized regions: the intercourse which this promoted among themselves, and the accession of light which they derived from a communication with Italy, Constantinople, and the East, gradually effected a general and visible improvement. The first crusade was soon followed by a change in the arms, dress, and architecture of every nation of Europe."

The pointed arch began to show itself in France and the neighbouring countries in the twelfth century. "In the thirteenth century," Mr. Whittington remarks, "the ecclesiastical architecture of France arrived at the utmost point of excellence which it was destined to attain in the course of the middle ages. Everything seemed to conspire, in the circumstances of the nation and of the world, to produce an interval favourable for the cultivation of the arts; and genius and talents were not wanting to make use of the happy opportunity. The thirteenth century found the French artists a numerous and protected body, in possession of a new and beautiful style of building; the religious enthusiasm of the times, formed by the spirit of the crusades, was at its height, and the throne of France was filled by monarchs equally distinguished by their piety and their magnificence. The dissensions between the barons and their sovereign, which agitated England during the greater part of this century, increased the power and ensured the tranquillity of France. Thus were external circumstances no less favourable to the prevailing taste, and its triumph was proportionably brilliant. At this time churches, almost without number, and rivalling each other in magnificence, were rising in every part of France: at Rheims, the cathedral began to display the graceful lightness of the new style; and the cathedral of Amiens, the pride and boast of Gothic architecture, was reared."

Among the causes which contributed to the decline of this brilliant period in the history of architecture, may be assigned, according to the above writer, "the wars which the English carried into the heart of France, and the divisions and factions of the French nobility, which rendered that kingdom during the fourteenth and fifteenth centuries a theatre of bloodshed and devastation. The unfortunate sovereigns were sometimes in captivity, and generally defeated; without finances, and at the head of an exhausted state, they had as little means of promoting, as their subjects had leisure for the cultivation of the arts. The strongest expressions are used by the French writers to describe the terror and misery which pervaded the country. The peasantry were forced from their labours, whole districts were laid waste, and the towns impoverished by the heaviest imports and exactions. In the midst of these evils, which were aggravated by the sufferings of famine and pestilence, we cannot wonder that the piety of the nation was unable to display itself in the construction of religious buildings. The princes of France had more occasion to fortify their cities than to found monasteries; and when their treasuries were insufficient to maintain their armies, it is not extraordinary that they afforded but few proofs of ostentatious devotion."

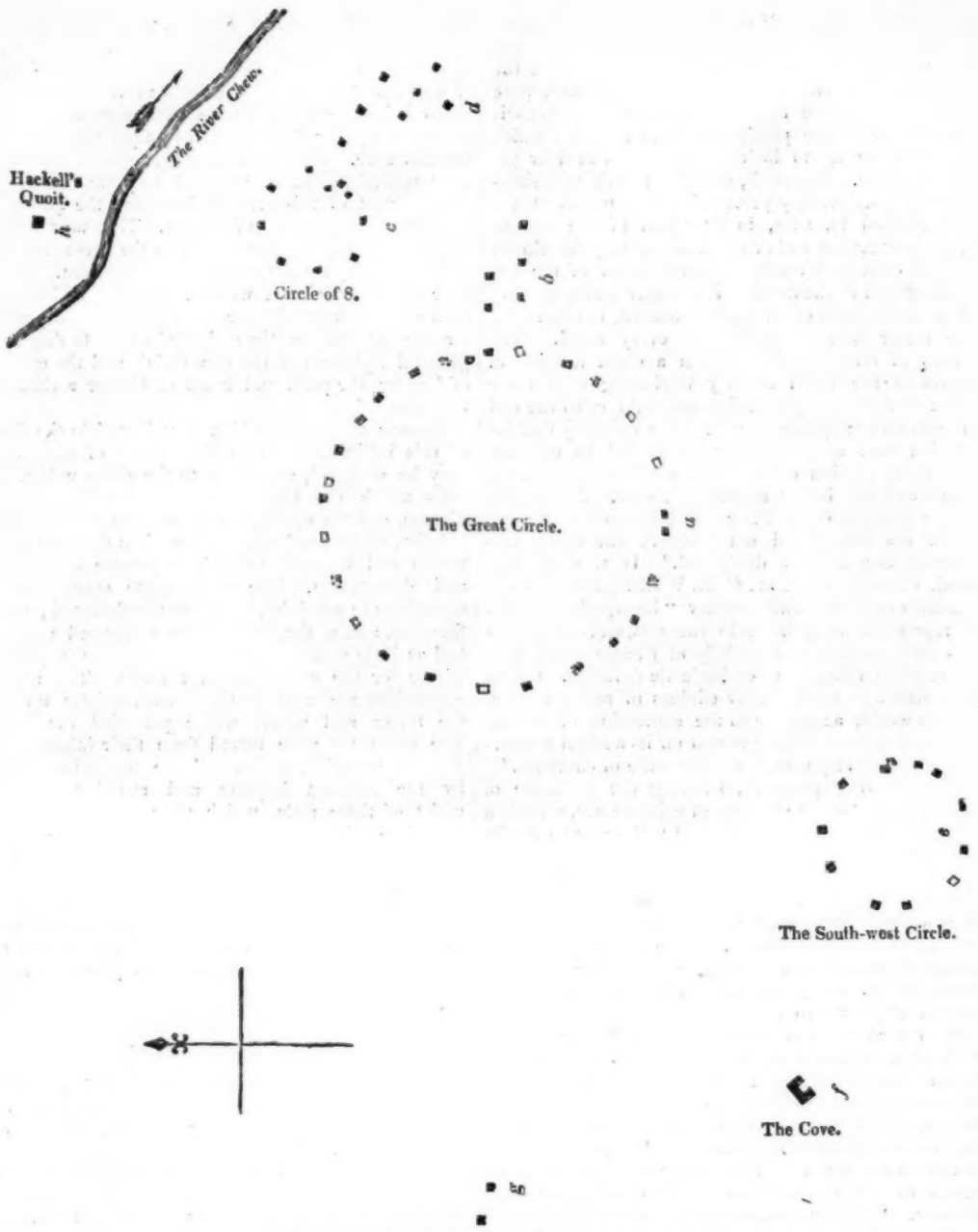
STANTON DREW.

THE Druidical remains at Stanton Drew, in Somersetshire, though not equal in size and celebrity to those of Stonehenge and Avebury, in Wiltshire, are still worthy of description.

Stanton Drew is a small parish in the hundred of Keynsham, which was formerly called Stantone, and Stantune from Stean, a stone, and ton, a town. The present name is said to mean the *Stone-town of the Druids*. It is about seven miles south of Bristol, on the farther side of Dundry Hill (the site of an ancient beacon); and from its being equidistant from Pensford and Chew-Magna arose the proverbial rhyme,

"————Stanton Drew,
A mile from Pensford and another from Chew."

For what purpose this and similar monuments were erected, is a point that has been much discussed; but it is considered, from the name and other circumstances, to be almost certain that this ancient structure not only belonged to the Druids, but that the village of Stanton Drew was in some measure the metropolis or seat of government of the Hædui. Druidical circles are by some antiquaries supposed to have been used to contain assemblies for purposes of religion, legislation, and other national affairs; but great difference of opinion has arisen as to what may have been the object of those rude solitary stones which have no uniformity of size or structure, and which are found at irregular dis-

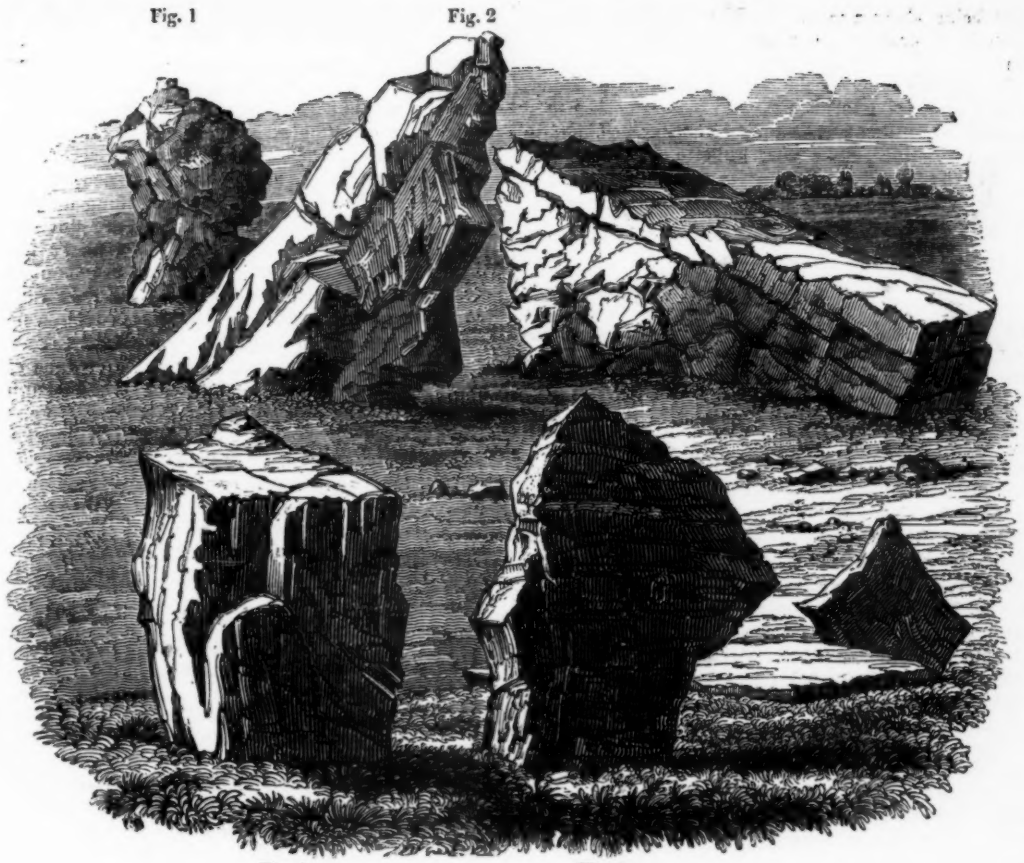


[Plan of the Druidical Temple at Stanton Drew.]

tances. The great antiquity of these monuments is unquestionable, some of them being intersected and injured by Roman ways, which sufficiently proves that their original use was lost before the construction of the roads. Druidism, which is said to have been first established in this country, flourished in the time of Nero, and subsisted for a considerable time afterwards; and young men came from Gaul to Britain to be initiated in the mysteries.

It is asserted that Stanton Drew was constructed before Stonehenge; and Dr. Stukely, who visited this place about 1723, considers it to be even more ancient than Avebury. Circles of upright stones of the same nature occur in many English counties; as the Hurlers, in Cornwall—Long Meg and her Daughters, in Cumberland—in Derbyshire, Devonshire, Dorsetshire, Oxfordshire, Westmoreland; and those of Stonehenge and Avebury, in Wiltshire, are well known.

Besides some other stones, Stanton Drew consists of three circles, which, by the people in the neighbourhood, are called the "Wedding," from a tradition that as a bride and her attendants were proceeding along, they were all converted to stone. The bride and bridegroom, the fiddler and the dancers, are fancifully pointed out; and it is considered wicked to attempt to count the stones. The measures given are principally taken from an account of this place published by the Rev. S. Seyer in the year 1821; and on comparing his description with the existing state of the place in the year 1834 it was found correct. The plan given above represents the whole structure;—the black marks indicating the stones that project largely, the outlines those that are merely visible, and the small dots show those that are conjectural. The great circle (*a*) has a diameter of 342 feet; but as only five stones are standing in their places, the *coup d'œil* is



[Stones at Stanton Drew.]

not striking. How many stones there were originally it is not easy to determine, those that remain being at unequal distances; and if the prostrate masses still lie where they fell, the stones could never have been regularly placed in the circle.

Dr. Musgrave, who wrote in 1718, imagines that the number of stones in this circle once amounted to 32, and possibly there may have been more. They were not perfect in his time; and they are said to have been much injured and broken, upwards of a century ago, for the purpose of mending the roads; and Dr. Stukely also mentions that they had suffered great dilapidation. Mr. Seyer thinks that there are certainly 27 stones, which vary considerably in size and shape: one is 16 feet high;—another, which is prostrate, is 11 feet high and 9 feet wide;—others are not so large, but are of a remarkable form, as Fig. 1 in the cut above. On the east side of this circle are five stones (*b*), which may have formed part of an avenue, as it is supposed that there were formerly four or five others. Still more to the east is a circle of 8 stones (*c*), the circumference of which is 150 feet distant from that of the large circle: the diameter of this circle is 94 or 96 feet. It appears by Musgrave that the eight stones were all erect in his time except one: at present four are prostrate, but they are high above the ground; and from the superior workmanship, this circle is possessed of considerable interest. Fig. 2 is 12½ feet high perpendicularly: it inclines towards the north, in which position it is supposed to have been originally placed. Fig. 3 is square and massive, and this, as well as the stone opposite, is a little out of the exact circle. The largest stone (Fig. 4, 15½ feet in length) is prostrate, and another stone is broken in several pieces. Eastward of these eight stones are seven others (*d*), which, with the addition of three or four more, which are conjectural, are said to have been an avenue to the circle of eight. Musgrave considers that these extrinsic stones and the five others before described originally formed another circle, going round the circle of eight. Stukely supposes that this circle and the stones in question were at first five concentric circles, but this appears improbable from the number of stones required, and of which there are no traces which would justify such a conclusion. The centre of the south-west circle (*e*), called by Stukely the Lunar Temple, is 714 feet from the centre of the great circle, which distance could not be shown in the plan. The diameter is stated by Wood* to be 140 feet;—by Stukely 120 feet; and it consists of eleven or twelve stones, which are rude and irregular in appearance. North-west of this circle, a little more than 100 yards distant, is a cove, Fig. 5 (*f* in the plan), at which the Druids are supposed to have sat for judicial purposes. It is formed of three large flat stones, which are about 992 feet from the centre of the great circle, and it is not far from the church of Stanton Drew. North or north-west of the cove, and about two-thirds of a mile from the great circle, are two large stones (*g*), lying flat; and beyond the river Chew, near the road on the approach to Stanton Drew, is a stone of large dimensions, called "Hackell's Quoit" (*h*), which was formerly computed to weigh thirty tons; but it has been broken at different times for materials to mend the roads. The local tradition is, that this immense stone was thrown into its present situation from Maes-knoll (which is called in the vicinity "Miss Knoll-tump") by Sir John Hautville, or Hawkwell, a famous champion, the dis-

* Description of Bath.

tance being about a mile. At Maes-knoll is a barrow, which it is probable may have reference to Stanton Drew.

Dr. Stukely supposes the original number of stones to have been 160; but Seyer, with more appearance of probability, considers that they did not exceed 60; in addition to which, some few, hitherto unnoticed, are said to exist in unfrequented parts of the parish. The greater part of the stones are of magnesian limestone, but some are of red sandstone and breccia.

TANNING.

The skins of animals would naturally suggest themselves as a covering among savage nations, and they were probably in use long before the art of converting skins into leather was known, though the origin of tanning is supposed to be of great antiquity: however, in modern times, patents have been frequently taken out for improvements in tanning, and almost every manufacturer has some peculiar method in the different stages of the business.

Leather has been applied to a great variety of purposes;—by the classical ancients it was converted into shoes, girdles, &c. Bottles were made of it in the form of the bodies of animals; and skins are used in Spain for holding wine; an instance familiar to all presents itself in Don Quixote's battle with the wine-skins: bags, buckets, (as those of the fire-engines,) garments called *camisini*, quivers, strings for musical instruments, (among the Irish,) caldrons, jerkins, surcoats, covering for shields, boats of boiled leather, tents, sails, and vessels for liquors, have been made of leather. Taylor, the water-poet, speaks of two black leather bottles, or bombards, of wine; they were also used to carry beer to soldiers on duty, and resembled black-jacks of leather. Sheep-skin pasted on wood was anciently a common binding for books.

The term hide is usually applied to the skins of horses, oxen, and cows, which are intended for the sole-leather of very stout shoes, and other substantial purposes. Skins, technically speaking, are those of calves and other animals, for upper-leather of shoes, boots, &c.

The bark used for tanning is the bark of the oak, though many other substances contain the tannin principle. The outside roughness of the bark, which is called the crut, is first taken off with a large drawing-knife; and after the crut (which is not employed in tanning) is removed, the bark is dried in a kiln and ground in a mill; the bark thus ground is then mixed with water in the pits, and forms what are called the woozes. When hides are brought to the tanner, the stoutest parts of them are selected to make butts or backs, which are for the sole-leather of very thick shoes. Ox and cow-hides are called crop-hides, and are also used for sole-leather. The first process used towards the skins of horses, oxen, &c. is to soak them in water for a few hours to get out the blood, and they are then put into pits containing lime and water, where they remain ten days or a fortnight, being taken out and in two or three times a-week: after that they are taken out and put across a beam, which is a piece of wood rather convex on the upper side, about three feet broad, and four and a half in length, one end of which rests on the ground, the other end being supported on legs at a convenient height for the workman, who spreads the hide on it, and takes the hair off with a blunt kind of drawing-knife, called a working-knife, which is curved to suit the form of the beam; this being completed, the hides are "fleshed," that is, the fat, &c. is all removed from the inside of the hide with a double-edged drawing-knife, called a flesher. The hides are then put into a weak wooze, and frequently handled, *i. e.*, drawn in and out of the pit to prevent creases, and that they may thoroughly imbibe the tannin principle: from this weak wooze they are removed gradually to woozes stronger and stronger; and in the strongest of these they remain some days without being taken out. The same woozes are used for many hides in succession. Hides remain in the woozes from six to twelve months, according to their thickness; and, at the proper period, they are taken out of the strongest wooze and hung up to dry, and, being sufficiently hardened, they are put on an iron half cylinder, about as thick as a man's thigh, called a striking-beam, on which they are mauled or beaten with a wooden mallet. They are then rubbed on this beam with a striking-pin to give them a face; the striking-pin is of iron, with two handles, the iron being triangular or square, and in size an inch each way. When the hides are a little drier, from hanging, they are spread on a large flat stone, or iron plate, and rolled with a brass roller, five inches in diameter and nine inches in length, which is loaded with weights to the amount of a quarter or half a ton, in an iron box fixed over the roller. The hides are then gradually dried in a drying-house, and are, after that, ready for sale. The pits in which the woozes are contained are usually about seven or eight feet long by four broad, and five feet deep.

Calf-skins, and the skins of other animals intended for dressing-leather, are first put into a pit of water to get out the blood, and they are then placed in the lime-water to remove the hair, after which they are steeped in a solution of the excrement of pigeons, in pits called "grainers," to render them soft and to cleanse them from the lime. They remain in these a day or two, and are worked over with a working-knife of the same kind as that used to remove the hair, the object of this being to remove all the small hairs and the filth called the "scud," which is the technical term for the colouring matter of the hair, that of red calves being red; of black ones, black, and the like. When the skins are sufficiently soft and clean they are immersed in the woozes, where they remain three months, more or less, according to the judgment of the manufacturer. Skins are more slowly and carefully dried than hides; and they are pulled out by hand as they dry, to prevent their shrinking, and, when nearly dry, they are doubled up and beaten upon a pin-block by a man holding the skin in his hand and striking it against the pins. The pin-block is four feet in length and two in width. The pins, which are of wood, are four inches in height and an inch in diameter; they are fixed upright on the block, and are placed in rows of eight by eighteen, being 144 in all. The leathers are sorted and put into half dozens, so as to make the weight of each bundle nearly equal. They are sold to the currier, who dresses and blacks them for the upper-leather of shoes and boots, and many other purposes.

Basils, which are sheep-skins for book-binding, and of which many pocket-book covers are made, are manufactured much the same as the last, except that they are worked in bran and water or pollard and water instead of the excrement of pigeons, and that the skins are wrung to get the fat out after they have been a few days in the woozes, the skin having been put in hot water to liquify the fat first. The odd bits which are cut off to make the skins more shapely are put into pits well saturated with lime, and then tied up in bundles and dried for the gluemakers. The hair is sold to the plasterers;—the long horse-hair is collected by men who come round to buy it for stuffing chairs, mattresses, &c. When the tannin principle is exhausted, the tan is dried and fermented by being laid to heat, and then water is added to it, and a horse treads it, it being put into a mould to give it a shape. When dry it is called a turve, and is sold for fuel, as is also the crut. The

horns are disposed of to persons who collect them: the tails of the oxen and cows, as well as the tails and the lower part of the ears of the calves, are the perquisites of the tanner's men. The tails and ears of the calves are called "rumps and burs," and from their gelatinous nature they make a rich stew. The business of a tanner requires a considerable capital, from the length of time necessary to prepare the hides and skins;—a capacious yard, drying houses, sheds, pits, and an abundant supply of water, are also indispensable.

Previously to the year 1830 there was an excise-duty on leather, but that duty was taken off by an Act of Parliament passed on the 29th of May in that year. Leather imported into this kingdom is, by a statute 3rd and 4th year of his present Majesty's reign (c. 56), made liable to a duty of 30 per cent. on the value, except in certain cases, which are otherwise specified; and skins which are not dressed are made liable to a duty of 20 per cent. on the value, except the species enumerated in the statute, which are—for a tiger-skin, 2*s.* 6*d.*; a lynx-skin, 6*d.*; chinchilla-skin, 3*d.*; elk-skin, 1*s.*; &c.

ON RHUBARB.

Of the many exotic plants which have been naturalized in this country, none has of late been brought into more general use, as a culinary vegetable, than the rhubarb; the fibrous parts or stems of the leaves of which, when baked, form a very agreeable substitute for the apple, at a much earlier period of the season than that in which any fruit is found to ripen in this climate. It was, indeed, occasionally cultivated for amusement in our gardens, and grown, in a few instances, for the production of its roots, which are extensively employed all over the world as medicine; but, for any other purpose, it was, until within these few years, utterly unknown. Its consumption for the table has now, however, become so universal, that whole acres are in many places devoted to its culture, and it has acquired a degree of importance which entitles it, on that account, to notice. The medicinal qualities of the species produced in England should also, we think, be more generally inquired into, as a prejudice exists against it which we believe to be entirely unfounded, and which, if removed, might render it a still more valuable article of growth.

The foreign countries from which it is obtained are chiefly the Tartarian provinces of Russia and China, some parts of the East Indies, and Asiatic Turkey, from each of which it is largely imported into Europe. Botanists distinguish its varieties under the several names of *rheum rhaponticum*, *undulatum*, *palmatum*, and *compactum*; and it is remarkable that they were for a long time greatly divided in their opinions concerning the species to which the officinal rhubarb belongs. The rhapontic was the *rha*, or *rheum*, of Dioscorides, and all the ancient Greeks and Romans, to whom the other kinds were unknown; and it continued in use until about a century ago, when the *undulatum* was considered superior, but was afterwards discarded for its competitors, which have been each in its turn alternately preferred. The sort termed *rheum palmatum* has, however, been since pronounced —upon the joint authority of both Dr. Pallas and Linnæus—to be the true Turkey rhubarb; and it is only that which demands our present attention.

The Turkey, the Russian, and even the East Indian rhubarb, it must be confessed, are more sightly to the eye, and consequently more marketable than the English: but it is well known that much artifice is used in rasping and colouring the roots, to give them such an improved outward appearance as may impose upon the druggists; and it behoves the faculty to examine whether the griping effects so frequently complained of may not proceed from the Dutch yellow, extracted from buckthorn berries, with which they are commonly tinctured. The foreign species may indeed be supposed to acquire some advantages from soil, climate, culture, and the mode of drying, but more, it may be presumed, from its superior age. The root has not been many years cultivated to any great extent in this country, and that which has been converted to medical use has usually been only from four to five or six years growth; whereas the foreign rhubarb is not taken up until it is eleven or twelve years old, which alone may perhaps be sufficient to constitute the difference: the circumstance at least seems to merit future inquiry.

We learn from authentic sources furnished by Mr. Foster, in his 'History of Voyages to the North,' that at Suchur—a province subject to the Great Khan of Tartary, where the plant flourishes with the greatest luxuriance, and from whence it is exported in vast quantities—the country is rocky and mountainous, being everywhere intersected by rivulets, the soil red, with an under-stratum of rubble, of that kind which our hop-growers here call "stone-brash;" in which land, the plants, when arrived at their full growth, are of such enormous size, that the roots often measure three-quarters of a yard in length, and are of the thickness of a man's body. They are dug up in winter, because they then contain the entire juice and virtue of their medicinal properties; those that are taken up in summer being of a light spongy texture, and unfit for use.

The root being thoroughly cleaned, and stripped of its outward coating, is cut transversely; the pieces are then placed on long tables, and turned carefully three or four times a day, that the yellow viscid juice which would otherwise exude from them, may incorporate with the substance of the root; for, if it be suffered to run out, the roots become light and unserviceable; and if they be not cut within five or six days after they are dug up, they become soft, and decay very speedily. In this state they remain for a few days, when holes are bored through them, and they are hung up on strings, exposed to the air and wind, but sheltered from the sun-beams; and thus, in about two months, they are completely dried, and arrive at their full perfection.

These directions, we apprehend, might be judiciously followed by those gardeners who cultivate the plant in this country; except that perhaps our climate is too damp to completely effect the drying process during the winter. It has therefore been recommended to use a room equally warmed by an air-stove, or else a moderately-heated oven; but we imagine the object would be equally well attained by slinging the pieces on lines hung under the roof of the kitchen. When thoroughly dry, the pieces should be rasped, to take off that shrivelled, scabrous appearance which they sometimes acquire during the operation; and it may not be improper to hint, that all the larger roots ought to be perforated through the centre, this part of the plant being the most liable to decay. They lose about two-thirds of their weight in drying; and if well prepared they should be dry, firm, and solid, but not hard or flinty, easily pulverizable, variegated on the inside with numerous pale red streaks resembling a nutmeg; appearing, when powdered, of a bright yellow colour, of a bitter astringent taste, and peculiar flavour, with an aromatic quality, manifested to the smell as well as taste.

Regarding the culture of the plant, we find numerous reports on the subject in the volumes containing the 'Transactions of the Bath and West of England Agricultural Society,' in consequence of a premium

offered some years ago by the Society for its growth and management. In these, however, nothing is stated demanding more minute detail than every gardener is acquainted with; as it is only requisite to have land of a deep, dry, and sandy staple, or what farmers call a "friable loam," and to keep it carefully free from weeds. It may be taken from the eyes or off-sets of the root, and set in the natural earth, well prepared either with rotten dung or compost, about the latter end of March, at about twelve to eighteen inches deep in the earth, and from eight to ten feet distance from each other; the latter the most advisable, if the soil be rich, as the plants will in that case completely cover it. The ground should be well hoed during the summer, and earthed up in the winter to guard the plants from the effects of frost; and if some manure be added every two or three years, it will be found to improve them. The young leaves may be cut off in the course of the spring for table use; but this should be sparingly done, when the roots are a main object, as it weakens their growth. They should be taken up in October or November; and we have seen the account of a plant, in the sixth year of its age, which rose to the height of eleven feet four inches; it grew in one day three inches, and in one night above four; many of the leaves were above five feet long, the numerous branches all covered with blossom, and then with seed. The root when taken up, clean washed, and deprived of its small and useless fibres, weighed 36 lbs.

Plants may also be raised from the seed by sowing it in a warm garden-bed, and taking up the plants in the following autumn, to be secured during the winter, and planted out in the following spring. Plants grown in this manner have at four years' growth produced 220 lbs. of dried marketable rhubarb, upon a piece of garden ground forty-four feet long by twenty-two feet wide, and divided into beds of about five feet each. The seed comes to perfection in four or five years, but should not be allowed to reach maturity, as it injures the future growth of the root: the seed-stalks should, therefore, be cut off as soon as they appear. Plants of the different varieties should also be grown separately; for if placed near each other, they will produce a mongrel species, which is afterwards incapable of future propagation: it has, however, been conjectured that these hybrids may be found to conjoin the properties of each, and thus to be susceptible of further improvement.

On the comparative medicinal qualities of the English and foreign species, numerous experiments have been made, and we have before us the results of more than forty trials of their different effects, made at the General Hospital and the pauper charity of Bath, upon patients of every age and sex by Drs. Falconer and Parry, and Mr. Farnell, the intelligent apothecary to the hospital, as well as Dr. Lettsom, and other medical men of eminence; all of whom concur in stating, that the exotic plant contains no one essential quality which is not possessed in a nearly equal degree by our own; it being, in some cases, even more effectual than the foreign sorts, especially that sort known as the East Indian. It appeared, indeed, that forty-five grains of the Turkey rhubarb contained a purgative property nearly equal to sixty of the English; or, in other words, that the latter requires to be given to the amount of about one-fourth more to produce the same effect; but some later experiments evince that it approaches nearer and nearer to the foreign rhubarb, in proportion to its age.

In addition to this, we have been told that the refuse pieces, such as small roots, or off-sets not thick enough to dry, have been used with great success in the dysenteries of cattle, when made into a strong infusion with white wine. In France, also, the recent stem is converted into a marmalade, which constitutes a mild and pleasant laxative: it is prepared by stripping off the bark, and boiling the pulp with an equal quantity of honey or sugar.

CHINA.—No. XIII.

Silk-worms and Silk (*continued*).

From the time when the worms leave the eggs to the period of their spinning, about twenty-four days* elapse when the process is well managed; and it is usually observed that the silk is in greater quantity and of better quality in proportion to the rapidity with which the worms are brought to the last stage. The quantity of leaves consumed will also be less, and the expense of attendants diminished. Instead of putting the worms, when ready to spin, into little cones of paper, as is done in England by those who keep silk-worms for their amusement, or, as in Italy, upon little hedges or espaliers of heath or straw, the Chinese lay them on shelves protected from the light. In this situation they draw from their mouths the silken thread in which they inclose themselves to undergo their final change. This curious and interesting operation is usually completed in four days. From 500 to 1000 yards of silk are spun in this time, at the rate of about six inches a minute, a rapidity as surprising, if the small size of the worm be considered, as is the fineness of the thread produced: the whole quantity scarcely weighing a single grain. When the cocoon, or little ball of silk, is completed, the worm once more throws off its skin, and becomes a brown chrysalis or grub, without external members, and almost without motion—a state of being well fitted for the close prison it is destined to inhabit. After remaining in this state about ten days, the sluggish chrysalis throws off its brown skin and comes forth a perfect butterfly, furnished with legs, eyes, and wings, and fitted for the enjoyment of its new state of existence. These last transformations take place within the cocoon; but the insect, now become active and comparatively powerful, makes use of its newly-found strength to burst its cell and set itself at liberty. The cocoon would be thus destroyed, the silk spoiled, and, as far as profit is concerned, all the hopes of the cultivator rendered vain, unless means were taken to prevent the last step. The death of the chrysalis is the only remedy devised, and this unfortunately necessary operation is performed in various ways. The easiest and cheapest mode is to expose the cocoons for a whole day to the heat of the sun, which effectually kills the grub, but renders the silk gummy. To avoid this, some persons boil the cocoons in water, or place them for an hour in a hot stove. This last mode is usually practised in India and in Europe by the most careful rearers; but the Chinese have a mode which they consider very superior, and which deserves a trial by other cultivators. The cocoons are placed in large earthen jars, interspersed with layers of dry salt; when the jars are full, they must be stopped so as to exclude the admission of air. By this method the chrysalis is killed in a few days, and the silk may be wound off at leisure.

A particular sort of wild silk is found in the province of Shantung. It is the produce of a caterpillar which feeds indiscriminately on the mulberry and many other trees. They do not spin cocoons like the silk-worm, but they form long threads, which being driven about by the wind, are caught by the trees and bushes, whence they are carefully gathered, and spun like flax or wool. A thick sort of cloth is woven from this silk; it is very strong and durable, does not easily spoil, and is considered very valuable.

* In Italy from thirty to thirty-two days.

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